Improving Forecasts with HIWPP

High-Impact Weather Prediction Project

Above: Image created using Terraviz visualization technology. This is the NASA Blue Marble data set overlayed with FIM model-created wind barbs at 500-millibar height. The red shape was drawn to sample wind speeds at a high-lighted section.

ADDRESSING THE SEVERE WEATHER NEEDS OF THE NATION BY DEVELOPING THE BEST ONE TO TWO-WEEK GLOBAL MODELS ON THE PLANET.

Example of chaos caused by the January 2014 North American Arctic cold wave. Photo Credit: The Guardian

A wintery assault of bitter cold, dangerous temperatures (the most extreme weather in decades) swept across the US causing chaos in its path. Recent high-impact storms, such as this January's Arctic cold wave or the "500-year" Colorado flood of September 2013, have shown the impact that these storms can have on lives, property, and economic activity in the U.S.

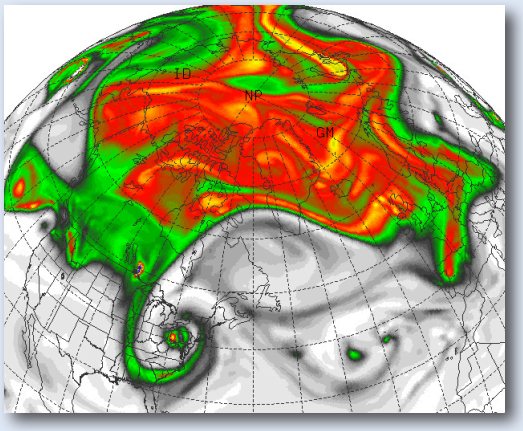
HIWPP IS WORKING TO:

- Improve current global weather models by reducing resoultion to 10-13 km
- Test next-generation global weather models in a real-time running mode
- Use a nested moving hurricane model that zeroes in on resolution within a global model allowing for more detailed hurricane track and intensity information
- Evaluate the National Multi-Model for Ensembles' ability to improve forecasts out to months and use cutting-edge visualization technology as featured in the image above
- Partner with the broader weather community to assess research models in real time.

"The goal of HIWPP is to improve one- to two-week weather prediction of nature's most dangerous storms such as hurricanes, floods, and blizzards." – *Dr. Alexander MacDonald, Director Earth System Research Laboratory*

Above: Images showing some of the devestation brought on by the historical Colorado flood of September 2013.

HIWPP USES NEXT-GENERATION HIGH-PERFORMANCE COMPUTING:

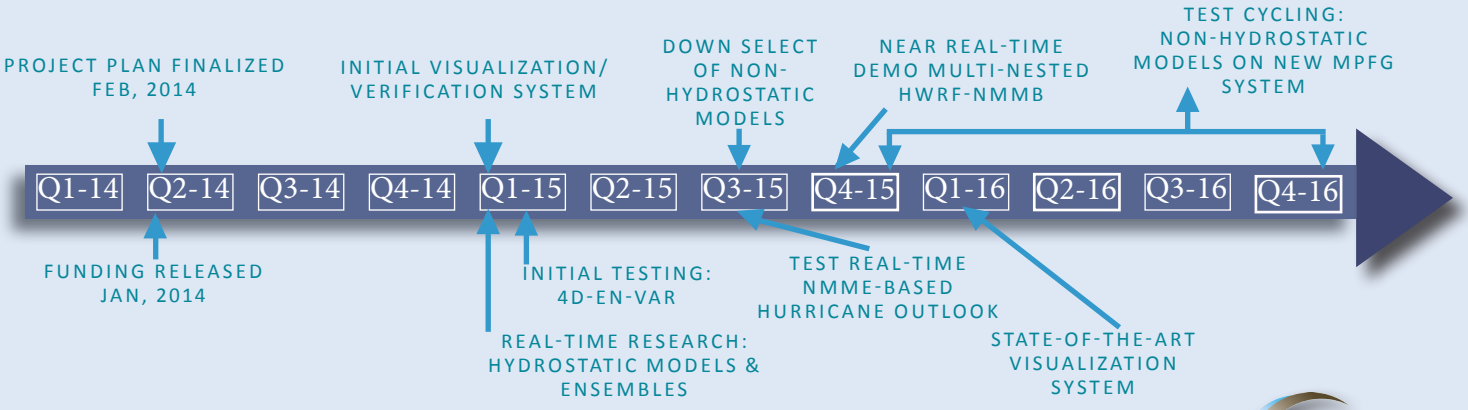


ESRL's Flow-following finite-volume Icosahedral Model (FIM), a global model used to predict superstorm Sandy's track and intensity at landfall. Image credit: NOAA ESRL

Key to becoming leaders in global modeling lies in affordable, powerful processors. NOAA is integrating massively parallel fine grain (MPFG) graphics-processing units or (GPU)s to optimize the model runs. NOAA has already demonstrated that a weather model can run 20-30 times faster on GPUs than on a traditional computer system.

HIGH-IMPACT WEATHER REQUIRES FULL SPATIAL RESOLUTION MODEL OUTPUT AND ONE-HOUR FORECAST UPDATES TO PROVIDE THE BEST RESEARCH INFO FOR CRITICAL PARTNERS.

HIWPP PROJECT TIMELINE (PRE-APPROVAL)



For more information about HIWPP see ▶▶▶

Tim Schneider
Project Manager
timothy.schneider@noaa.gov
303-497-5160
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